



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,611	09/14/2001	Takuya Nakashima	L7016.01127	7319

24257 7590 01/13/2006

STEVENS DAVIS MILLER & MOSHER, LLP  
1615 L STREET, NW  
SUITE 850  
WASHINGTON, DC 20036

EXAMINER

CREPEAU, JONATHAN

ART UNIT PAPER NUMBER

1746

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/936,611	<b>Applicant(s)</b> NAKASHIMA ET AL.	
	<b>Examiner</b> Jonathan S. Crepeau	<b>Art Unit</b> 1746	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5,6,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,11 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 1, 5, 6, 11, and 12. Applicant's statement of common ownership is sufficient to overcome the 103 rejection over the Ito et al (6124057) reference. However, as a new ground of rejection has been applied herein (a family member of the Ito '057 reference), this action is non-final.

### ***Claim Rejections - 35 USC § 103***

2. Claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 853347.

The reference is directed to a non-aqueous electrolyte secondary battery. The positive electrode comprises a lithium manganese oxide (see page 4, line 37). The negative electrode contains graphite powder and an active material that may comprise  $\text{SrCO}_3$  (see Table 4; page 4, line 42)

The reference does not expressly teach the weight percent of strontium as recited in claim 1.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to adjust the weight percentage of strontium carbonate in the negative electrode mixture so as to

affect the resulting properties of the electrode. Table 4 discloses the discharge capacity and capacity maintenance of the exemplary batteries of the invention. It would be well within the skill of the art to incorporate varying amounts of strontium carbonate to affect these properties. As such, the claimed range is not considered to distinguish over the reference.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '347 as applied to claims 1, 11, and 12 above, and further in view of Iwata et al (U.S. Patent 6,168,888).

EP '347 does not expressly teach that the lithium manganese oxide is a cubic material possessing the properties recited in instant claim 5.

Iwata et al. is directed to a cubic spinel-type lithium manganese oxide containing heteroelements (see abstract). In column 2, line 48, the reference teaches that the lattice constant is between 8.19 and 8.24 angstroms. In column 2, line 63, the reference teaches that the average particle diameter is 1-50 microns and the BET surface area is 0.1-5 m<sup>2</sup>/g.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the lithium manganese oxide of Iwata et al. in the battery of EP '347. In column 1, line 51, Iwata et al. teach the following:

It is an object of the present invention to provide a high-performance spinel-type lithium-manganese oxide for use as a material for positive electrodes of a Li secondary battery with inhibited Mn dissolution in an organic electrolyte, as well as a high-performance lithium secondary battery using said lithium-manganese oxide as a positive electrode.

As such, the artisan would be motivated to use the lithium manganese oxide of Iwata et al. in the battery of EP '347, thereby rendering the subject matter of claim 5 obvious.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '347 as applied to claims 1, 11, and 12 above, and further in view of Wang et al (U.S. Patent 5,532,084).

EP '347 does not expressly teach that the lithium manganese oxide is a rhombic system material possessing the properties recited in instant claim 6.

Wang et al. is directed to a manganese dioxide product (see abstract). In column 4, line 32, the reference teaches that the manganese dioxide is orthorhombic with lattice constants of 4.5, 9.28, and 2.87 angstroms.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the manganese dioxide of Wang et al. in the battery of EP '347. In column 2, line 23, Wang et al. teach the following:

new name) in the figures and description herein. The P-CMD product of the invention when used as cathode active material in electrochemical cells, particularly alkaline and lithium cells, provides these cells with higher capacity and energy density per gram than are obtainable from the same cells employing conventional chemical manganese dioxide (CMD) or electrolytic manganese dioxide (EMD). Additionally, the discharge voltage profiles of cells, particularly lithium cells, containing the P-CMD as cathode active material, are higher than in conventional cells employing EMD or CMD cathode material. This is very attractive in that the use of P-CMD as cathode material can result in a higher power cell. The P-CMD product is characterized by

Accordingly, the artisan would be motivated to use the manganese oxide of Wang et al. in the battery of EP '347, thereby rendering the claimed lattice constants obvious. Furthermore, the artisan would be sufficiently skilled to manipulate the average diameter and surface area of the manganese dioxide so as to fall within the claimed ranges. These parameters are known to affect the resulting electrochemical properties of an active material. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

### **Conclusion**

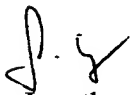
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the

Art Unit: 1746

organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
January 10, 2006